

Brief on Appeal for U.S. Serial No. 08/533,589 Filed September 25, 1995

#38
Appeal
Brief

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND
INTERFERENCES

In re the application of:
IGOR PALLEY ET AL.

Docket: 30-3744CPA

Serial Number: 08/533,589

Group Art Unit: 3727

Filed: September 25, 1995

Examiner: N. Eloschway

For: BLAST RESISTANT AND BLAST DIRECTING CONTAINERS AND
METHODS OF MAKING

Colonial Heights, VA 23834
April 11, 2001

BRIEF ON APPEAL

Assistant Commissioner for Patents
Washington, D.C. 20231

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Sir:

Applicant hereby appeals to the Board of Patent Appeals and Interferences from the decision of the Primary Examiner dated November 1, 1999, finally rejecting claims 1-6, 8-38, 42-57 and 74-76. A Notice of Appeal was filed on May 1, 2000. The Commissioner is authorized to charge the Appeal Brief Filing Fee (37 CFR §1.17c)) of \$310.00 to Deposit Account No. 01-1125. The Commissioner is authorized to charge \$1,390.00 for a four (4) month extension fee (37 CFR § 1.17(a)(4)) for responding to this Notice of Appeal or any additional fees which may be required by this paper, or credit any overpayment to Deposit Account No. 01-1125.

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I. REAL PARTY IN INTEREST

The real party in interest is Honeywell International Inc., successor in interest to AlliedSignal Inc., who is the assignee of record.

II. RELATED APPEALS AND INTERFERENCES

The present patent application has a continuation-in-part patent application on which an appeal brief has been submitted: USSN 08/717,042, filed September 20, 1996, with claims (numbered 1, 3-11, 13-47 and 51-53) under final rejection by the same Examiner, Niki M. Eloshway.

III. STATUS OF CLAIMS

Claims 1-6, 8-38, 42-57 and 74-76 are presented on appeal. These claims have been finally rejected in the Office Action identified above. A copy of the claims is reproduced in the Appendix (Section IX).

Claims 7, 39-41, 58-73 and 77-117 have been withdrawn from consideration by the Examiner as directed to a non-elected invention and/or species. No claims are allowed.

IV. STATUS OF ALL AMENDMENTS FILED SUBSEQUENT TO FINAL REJECTION

There have been no amendments filed subsequent to the issuance of the Final Rejection mailed November 1, 1999.

V. SUMMARY OF THE INVENTION

The invention is a blast resistant container. In one embodiment, the container is comprised of at least three bands of material with the first inner band being nested within a second band, which is nested within a third band. The outermost band is substantially seamless and blast resistant. These bands are oriented so as to substantially enclose a volume and to form a container wall having a thickness substantially equivalent to the sum of the thicknesses of at least two of the bands. In a variation of this embodiment, the three bands are formed of a composite material with the first, inner band being rigid. The present invention is also a composite strip attached to and reinforcing a blast resistant

container. The composite strip comprises a tape of unidirectional high strength fibers or oriented film encircling the container in a hoop direction at least once. These containers can withstand tremendous pressures and resist pulling apart after an explosion therein.

VI. ISSUES

The issues in this appeal are:

A. whether claims 12-32, 34-36, 43-57 and 74-76 are unpatentable under the judicially created doctrine of obviousness-type double patenting over claims 1-26 of USP 5,545,455 (Prevorsek et al.) in view of Lewis (USP 674,009);

B. whether claims 1-6, 33, 37, 38 and 42 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Lewis (USP 674,009);

C. whether claims 8, 9, and 11 are unpatentable under 35 U.S.C. §103(a) over Lewis in view of Rosenbloom, Jr. et al. (USP 4,290,468);

D. whether claim 10 is unpatentable under 35 U.S.C. §103(a) over Lewis in view of Rosenbloom, Jr. et al., as applied to claim 9 above, and further in view of Hall (USP 4,216,803); and

E. whether claims 12-32, 34-36, 43-57 and 74-76 are unpatentable under 35 U.S.C. §103(a) over Lewis in view of Prevorsek et al.

VII. GROUPING OF CLAIMS

Claims 1-6, 33, 37, 38 and 42 are grouped together by the Examiner. Appellants respectfully submit that these claims, as a whole, do not stand or fall together. Specifically, claims 1-6; claim 33; and claims 37-38 and 42, are directed to independent, but related, inventions.

Claims 12-32, 34-36, 43-57 and 74-76 are also grouped together by the Examiner. Appellants respectfully submit that these claims, as a whole, do not stand or fall together. Specifically, claims 12-32; claims 34-36; claims 43-57; and claims 74-76, are directed to independent, but related, inventions.

VIII. ARGUMENTS

With reference to the claims groupings, the Examiner has grouped independent claims together for rejection, as in Section VI.B (claims 1, 33 and 37), and dependent but distinct claims, as in Sections VI.A and VI.E.

With reference to claims 1, 33, and 37, the container of claim 1 minimally comprises three nested bands of material arranged so as to substantially enclose a volume and form a container wall having a thickness substantially equivalent to that of at least two of the bands. The outermost band is substantially seamless and blast resistant. In contrast, claim 33 requires three bands of a composite material, substantially rectangular in cross-section so as to form a rectangular prism having six faces, with the inner band being rigid. Claim 37 provides an improved, hinge-less and channel-less closure for the access opening of a blast resistant container. The closure comprises at least one band of material encircling the container to at least partially cover the access opening. It is submitted that these claims and those dependent therefrom should therefore be considered independently.

A. Are claims 12-32, 34-36, 43-57 and 74-76 unpatentable under the judicially created doctrine of obviousness-type double patenting over claims 1-26 of USP 5,545,455 (Prevorsek et al.) in view of Lewis (USP 674,009)?

The references, alone or together, neither teach nor suggest the blast resistant container assembly of claims 12-32, 34-36, 43-57 and 74-76, for the reasons that follow.

There is no motivation to combine these two references. Although both Prevorsek et al. and Lewis refer to containers, the Lewis container is a knockdown paper box formed of materials from the turn of the twentieth century. Prevorsek et al., on the other hand, details a composite material and broadly refers to its use in forming flat panels that are individually wrapped and stitched to control delamination. Although the composite material can be used in the fabrication of blast resistant articles such as containers, there are no details as to how such a container should be constructed and/or why. Appellants would note that the Prevorsek et al. teaching at column 10, lines 48-56, refers to the materials of construction for girdle 18 in Figure 2. The angular orientation of adjacent layers of fibers, e.g., at 0/90, creates a material commercially available from Honeywell International Inc., formerly AlliedSignal Inc. (assignee of record of the present invention), as SPECTRA SHIELD® or GOLD SHIELD® ballistic material. This material is then wrapped to form a girdle 18 about stacked fibrous layers. Such a construction was used in panels or faces for a container, but there is absolutely nothing in Prevorsek et al. to suggest the use of bands to form a

container. A container must be able to contain something. Reference to Figure 2 of Prevorsek et al. will show that the material could be used to form a container, but as such, does not form a container. This deficiency is not met by Lewis since Lewis cannot and does not address the "why" of the construction for blast resistance.

Appellants also respectfully disagree with the Examiner's position that the outermost band of the Lewis container is substantially seamless, as is required by Appellants' claimed invention. See Appellants' specification on page 22 at lines 8 - 13 wherein it is indicated "that the band is seamless across each edge joining adjacent faces for more than at least one full wrap . . . and also that at any given point on the band there is at least one wrap/layer that is seamless." (emphasis added) In other words, the outermost band is greater than at least one full wrap, i.e., greater than 360 degrees, and is seamless across each edge. This is a distinction with a difference. There is no weak line from one side of the outermost band to the other. The substantially seamless outermost band supports the inner bands whether a five-sided strip is used to create a four-sided inner band or otherwise. Lewis on the other hand shows bands whose ends do not overlap, but at best abut one another. The outermost/third band of Lewis is taped across a joint (i.e., across an edge), one of the weakest possible places to connect the two ends of the band for blast resistance. This connection across the joint (edge) is what keeps this outermost band of Lewis from being substantially seamless. It is also where the container will split when subjected to the force of a blast from within the container, and in this regard, cannot be deemed to be blast resistant.

B. Are claims 1-6, 33, 37, 38 and 42 unpatentable under 35 U.S.C. §102(b) as being anticipated by Lewis (USP 674,009)?

Lewis does not teach the blast resistant container of claims 1-6, 33, 37, 38 and 42, for the reasons that follow.

A prior art reference must teach every element to anticipate a claimed invention. Lewis fails to do this since the third band A is neither blast resistant nor substantially seamless, as discussed in Section VIII.A above.

C. Are claims 8, 9, and 11 unpatentable under 35 U.S.C. §103(a) over Lewis in view of Rosenbloom, Jr. et al. (USP 4,290,468)?

The references, alone or together, neither teach nor suggest the blast resistant container of claims 8, 9 and 11, for the reasons that follow.

Both of these references relate to collapsible containers; however, neither one of them teaches or suggests blast resistance. It is respectfully submitted that they are inapposite to these claims, and this rejection should therefore be withdrawn.

D. Is claim 10 unpatentable under 35 U.S.C. §103(a) over Lewis in view of Rosenbloom, Jr. et al., as applied to claim 9 above, and further in view of Hall (USP 4,216,803)?

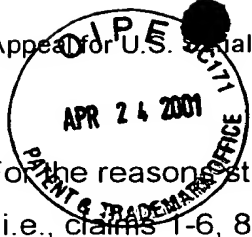
The references, alone or together, neither teach nor suggest the blast resistant container of claim 10.

In light of the comments above, it is respectfully submitted that none of these references either teaches or suggests that the containers are blast resistant or that the outermost band is both blast resistant and substantially seamless, and therefore, this rejection should be withdrawn.

E. Are claims 12-32, 34-36, 43-57 and 74-76 unpatentable under 35 U.S.C. §103(a) over Lewis in view of Prevorsek et al.?

The references, alone or together, neither teach nor suggest the blast resistant container of claims 12-32, 34-36, 43-57 and 74-76, for the reasons that follow.

There is absolutely no motivation for one of ordinary skill in the art of blast containment to combine these two references based on the claims currently on file and under consideration. Lewis has absolutely nothing to do with blast containment. It is simply a collapsible cardboard/paper box. Note the date of issuance, i.e., 1901. It is respectfully submitted that one of ordinary skill in the art, even with the Prevorsek et al. reference available, would not look to Lewis for container structure to enhance blast resistance. The substantially seamless outermost band (at least one full wrap in claim 74) of the claimed invention is different from the bands of Lewis. The Lewis bands must only abut, not overlap, and not cover the edges/joints as required by Applicants' claimed invention.



CONCLUSION

For the reasons stated, Appellants respectfully submit that the claims on appeal, i.e., claims 1-6, 8-38, 42-57 and 74-76, should be found allowable.

Respectfully submitted,
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IX. APPENDIX - CLAIMS

1. A blast resistant container comprising at least three bands of a material, a first inner band being nested within a second band which is nested within a third band, said bands being oriented relative to one another to substantially enclose a volume and to form a container wall having a thickness substantially equivalent to the sum of the thicknesses of at least two of the bands, the outermost band being substantially seamless and blast resistant.

2. The container of claim 1 wherein each of said first, second, and third bands is a tube having a longitudinal axis, and wherein the longitudinal axes of said first, second, and third bands are substantially perpendicular to one another.

3. The container of claim 2 wherein each of the bands is substantially polygonal in cross-section.

4. The container of claim 3 wherein at least one of said bands comprises a plurality of substantially rectangular surfaces in series, said surfaces numbering at least one more than the number of sides of the polygon of the cross-section of the band, and wherein said band comprising said surfaces is nested within another said band.

5. The container of claim 3 wherein each of the bands is substantially rectangular in cross-section to thereby substantially form a rectangular prism.

6. The container of claim 5 wherein each of the bands is substantially square in cross-section to thereby substantially form a cube.

8. The container of claim 1 wherein a rigid support structure is nested within said first inner band.

9. The container of claim 8 wherein said rigid support structure comprises a low density, lightweight polymeric or metallic band.

10. The container of claim 9 wherein said rigid support structure is wrapped with glass or carbon fibers.

11. The container of claim 8 wherein said first inner band is affixed to said rigid support structure.

12. The container of claim 1 wherein the band material comprises at least one fibrous layer, said fibrous layer comprising at least one network of fibers, at least about 10 weight percent of said fibers being substantially continuous lengths of fiber that encircle the enclosed volume.

13. The container of claim 12 wherein said fiber comprises a high strength fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

14. The container of claim 12 wherein at least about 50 weight percent of said fibers are substantially continuous lengths of fiber that encircle the enclosed volume, and wherein said bands are substantially seamless.

15. The container of claim 14 wherein at least about 75 weight percent of said fibers are substantially continuous lengths of fiber that encircle the enclosed volume.

16. The container of claim 15 wherein said fiber comprises a high strength fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

17. The container of claim 16 wherein said high strength fibers are selected from the group consisting of extended chain polyolefin fibers, aramid fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers, carbon fibers, and mixtures thereof.

18. The container of claim 16 wherein said fibers are polyolefin fibers.

19. The container of claim 16 wherein said fibers are aramid fibers.

20. The container of claim 16 wherein said fibers are a mixture of at least two of polyethylene fibers, aramid fibers, polyamide fibers, carbon fibers and glass fibers.

21. The container of claim 13 wherein said high strength fibers are selected from the group consisting of extended chain polyolefin fibers, aramid fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers, carbon fibers, and mixtures thereof.

22. The container of claim 13 wherein said fibers are polyolefin fibers.

23. The container of claim 13 wherein said fibers are aramid fibers.

24. The container of claim 13 wherein said fibers are a mixture of at least two of polyethylene fibers, aramid fibers, polyamide fibers, carbon fibers and glass fibers.

25. The container of claim 13 wherein the network of fibers is in a resin matrix.

26. The container of claim 25 wherein the matrix comprises a low modulus polymeric matrix selected from the group consisting of a low density

polyethylene; a polyurethane; a flexible epoxy; a filled elastomer vulcanizate; a thermoplastic elastomer; and a modified nylon 6.

27. The container of claim 25 wherein said fiber comprises a high strength fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

28. The container of claim 27 wherein each of the bands is substantially polygonal in cross-section and deforms to increase the enclosed volume during an explosion.

29. The container of claim 25 wherein at least about 50 weight percent of said fibers are substantially continuous lengths of fiber that encircle the enclosed volume, and wherein said bands are substantially seamless.

30. The container of claim 29 wherein at least about 75 weight percent of said fibers are substantially continuous lengths of fiber that encircle the enclosed volume.

31. The container of claim 1 wherein said band material comprises an oriented film selected from the group consisting of homopolymers and copolymers of thermoplastic polyolefins, thermoplastic elastomers, crosslinked thermoplastics, crosslinked elastomers, polyesters, polyamides, fluorocarbons, urethanes, epoxies, polyvinylidene chloride, polyvinyl chloride, and blends thereof.

32. The container of claim 31 wherein said band material further comprises a network of fibers, at least about 10 weight percent of said fibers being substantially continuous lengths of high strength fiber that encircle the enclosed volume, said high strength fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

33. A blast resistant container comprising three tubular bands of a composite material, each of said bands being substantially rectangular in cross-section, a first rigid inner band being nested in a second band which is nested in a substantially seamless blast resistant third band so as to form a rectangular prism having six faces each of which has a thickness substantially equivalent to the sum of the thicknesses of at least two of the bands.

34. The blast resistant container of claim 33 wherein said composite material comprises at least one fibrous layer, said fibrous layer comprising at least one network of high strength fibers dispersed in a resin matrix, at least

about 10 weight percent of said fibers being substantially continuous lengths of fiber that encircle the prism.

35. The blast resistant container of claim 34 wherein the third band is substantially seamless and comprises four rectangular surfaces in series which encircle the prism.

36. The blast resistant container of claim 35 wherein the bands deform during an explosion to increase the volume enclosed thereby.

37. In a blast resistant container having an access opening, the improvement comprising a hinge-less, channel-less closure for said opening, said closure comprising at least one band of a material which encircles the container to at least partially cover said access opening.

38. The improved container of claim 37 wherein said band slides on said container in a first direction to at least partially expose said access opening and in a second direction to at least partially cover said access opening.

42. The improved container of claim 37 wherein said container includes a door for said access opening, said band at least partially covering said door when said door is closed over said access opening.

43. The improved container of claim 37 wherein the band material comprises at least one fibrous layer, said fibrous layer comprising at least one network of fibers, at least about 10 weight percent of said fibers being substantially continuous lengths of fiber that encircle the container.

44. The improved container of claim 43 wherein said fiber comprises a high strength fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

45. The improved container of claim 43 wherein at least about 50 weight percent of said fibers are substantially continuous lengths of fiber that encircle the container, and wherein said band is substantially seamless.

46. The improved container of claim 45 wherein at least about 75 weight percent of said fibers are substantially continuous lengths of fiber that encircle the container.

47. The improved container of claim 45 wherein said fiber comprises a high strength fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

48. The improved container of claim 47 wherein said high strength fibers are selected from the group consisting of extended chain polyolefin fibers, aramid fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers, carbon fibers, and mixtures thereof.

49. The improved container of claim 47 wherein said fibers are polyolefin fibers.

50. The improved container of claim 47 wherein said fibers are aramid fibers.

51. The improved container of claim 47 wherein said fibers are a mixture of at least two of polyethylene fibers, aramid fibers, polyamide fibers, carbon fibers and glass fibers.

52. The improved container of claim 44 wherein said high strength fibers are selected from the group consisting of extended chain polyolefin fibers, aramid fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers, carbon fibers, and mixtures thereof.

53. The improved container of claim 44 wherein said fibers are polyolefin fibers.

54. The improved container of claim 44 wherein said fibers are aramid fibers.

55. The improved container of claim 44 wherein said fibers are a mixture of at least two of polyethylene fibers, aramid fibers, polyamide fibers, carbon fibers and glass fibers.

56. The improved container of claim 47 wherein the network of fibers is in a resin matrix.

57. The improved container of claim 56 wherein the matrix comprises a low modulus polymeric matrix selected from the group consisting of a low density polyethylene; a polyurethane; a flexible epoxy; a filled elastomer vulcanizate; a thermoplastic elastomer; and a modified nylon 6.

74. In a blast resistant container, the improvement comprising a composite strip attached to and reinforcing said container, said strip comprising a tape of unidirectional high strength fibers or oriented film encircling the container in a hoop direction at least once.

75. The container of claim 74 wherein said strip comprises a tape of unidirectional high strength fibers having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

76. The container of claim 74 wherein said strip comprises a tape of oriented film selected from the group consisting of homopolymers and copolymers of thermoplastic polyolefins, thermoplastic elastomers, crosslinked thermoplastics, crosslinked elastomers, polyesters, polyamides, fluorocarbons, urethanes, epoxies, polyvinylidene chloride, polyvinyl chloride, and blends thereof.